Fork Order ID 87331 *87331* Page 1 213-12 1:09:57 PM Accept *N900040100* D350-748-101 Item ID: Setup Start Revision ID: WK Crosstube Installation, High Fwd Item Name: 7/10/12 Start Qty: 1.00 **Cust Item ID: Start Date:** Req'd Qty: 1.00 Required Date: 9/28/12 Customer: Reference: Run Process Plan: MLJ Date: 12/07 Tooling: Date: Approvals: Stop Date: SPC (Y/N): Date: Tool ID Tool # Plan Reject Reject Insp. Sequence ID/ Operation Set Up/ Accept Code Qty Oty Number Stamp Work Center ID Description **Run Hours Revision Nbr** Draw Nbr D350-748-141 0.00 100 DOCUMENT CONTROL *100* 0.00 DC Memo CHG002 12 11-00 Photocopy bluefile & type labels per PPPD350-748-101 Document Control 110 BENDING MACHINE - CROSSTUBES *110* 0.00 CNC Bend I Memo Bend tube as per Dwg D350-748-141 using CNC bender program D350F and CNC Delta 100 Bender ****UNDER BEND .225" PER SIDE**** Crosstube Dimensional Check 0.00 120 *120* 0.00 Quality Control

NCR:	Yes	/	No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA:	Date: _	
QA Closed:	Date:	
PARTMENT/PRO	OCESS	•
	Vater Jet	Engineering Quality

										QA Closea:	Date:	
Work Orde	er:					DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
[_					Rework		Skid-tube	Crosstube		Water Jet	Engineering
Part N	No.					Scrap		Machining	Small Fab	Pro	d. Eng. Coor.	Quality
	_					Use-as-is	The	rmoforming	Finishing	Rec/Sto	re/Packaging	Other
NCR N	۷o					Work Order Update]	Large Fab	Composite		Supplier	
<u></u>											,	.
Root						ption of work order update	Initial	l.	ction	Sign &		
Cause	\perp	Date	Step	Qty		or Non-conformance	Chief Er	g Des	cription	Date	Verification	QC Inspector
Doc/Data	Ш											
Equip/Tooling	Ц											
Operator	Ш											
Material												
Setup	Ш											
Other	Ц					,						
Process				,		, p						
Supplier	Ш											
Training	Ш					- 1 -						
Unapproved				<u> </u>								
						F	AULT CAT	EGORY				
Landi	$\overline{}$				_	General				•		-
		Bending				Bend	Grain	• . •		Ovalized	<u> </u>	Pressure/Forced
	-	Centre No	ot Concer	ntric to	o/s	BOM/Route	Hard	vare		Over/Under	tolerance	Temperature/Cure
		Cracks	•			Broken/Damaged	Inspe	ction Incomplete		Part Incorre	ct	Weld
		Crushed/0	Crimped.			Burrs	Instru	ctions Incomplete	e/Unclear	Part Lost/M	issing	Wrong Stock Pulled
		Cuffs				Contamination	Mair	tenance		Part Moved		
[Heat Trea	it			Countersink	Misla	beled		Positioned \	V rong	
		Inspection	n Strip in	Tube		Cut Too Short	Misre	ad		Power Loss/	'Surge	Other
		Ripples in	Bend		: , [Drill Holes	Offse	t		-		
		Torque W	aves in E	xtrusio	n /	Drawing	Out	f Calibration				
		Turning S	equence		1	Finish	Out	f Sequence				
		Wave/Tw	ist in Tub	e		Folio	Outsi	de Dimensions				

Page 2 July-13-12 1:09:57 PM Item ID: D350-748-101 Accept *N900040100* Setup Start U/R **Revision ID:** Stop Crosstube Installation, High Fwd Item Name: Start Qty: 1.00 7/10/12 **Start Date: Cust Item ID:** Req'd Qty: 1.00 Required Date: 9/28/12 **Customer:** Reference: Start Run Tooling: Date: Approvals: Stop SPC (Y/N): Date: Operation Set Up/ St Tool # Plan Reject Sequence ID/ Tool ID Accept Reject Insp. Code Qty Qty Number Stamp Work Center ID / Description Run Hours 0.00 125 CZ raliolo2 (*195* 0.00 HandFXtube Memo ***Stress relief*** Hand Finishing Crosstubes Heat treat crosstube as per QSI010 4.3 Temp: Start time: Finish time: Inspect dimensions to drawing 127 *107* QC Memo Quality Control

NCR:	Yes	/	No

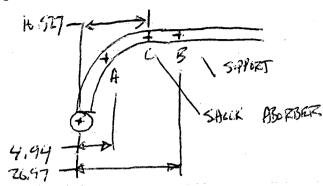
WORK ORDER NON-CONFORMANCE / UPDATE

/ /-	• 5	
DQA; Date: 12/1/10	<u> </u>	
<u> </u>	7.	,
. /	**	•

,				<u></u>	·				QA Closed:	() Date:	· · · · · · · · · · · · · · · · · · ·
Work Order	. 8,	73=	31		, DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part No	D3Sc 012/	701	8-1	01	Rework Scrap Use-as-is Work Order Update] 1	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root Cause	Date	Step	Qty	j	ption of work order update or Non-conformance	Initial Chief Eng	į	tion ription	Sign & Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved	12/194	110	1		CRUSHING IS OVER		Acceptable attached		0AS 12 -89, 12/19/4	Vernication Vernication	Conspector
опаррточеа		1	1	<u> </u>		AULT CATE	L GORY			<u> </u>	
Landin	g Gear				General	7,40			-		
_	Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspection Ripples in Torque W Turning S	Crimped. at n Strip in n Bend Vaves in E	Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing Finish	Grain Hardwa Inspecti Instruct Mainte Mislabe Misreac Offset Out of (ire ion Incomplete ions Incomplete/ enance	<u>v</u>	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned I Power Loss/	ct ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
F	Wave/Tw	-		<u> </u>	Folio	\vdash	Dimonsions				

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CRUSHING OF D350-748-101



POINT B UD = 2.339 ID = 2.000

POINT B UD = 2.339 ID = 2.000

VESTIVE = T= 0.684 in 4

AB F= ML/I = Pn4.94 x 2.044/2 x 0.361 = 13.98 P BS = Pu 26.97 x 2.339 /2 = 0.684 = 46.11 P

M.S. = 46.11/13.98-1 = 2.30

Es Tobe will fail out suppost before tube fails at avec of max crushing so 8% CRUSTUM 15
Acceptable

FORT C I= 0.684 114
Fx 16.527 x 2.379/2 x 0.684 2 28.26.P

MS=28.26/13.58-1=1.02

of most cousting so Bill crushing is acceptable

It is a properly to be a properly of 12, 64, 19



Revision ID: Item Name:	D350-748-101 U/R Crosstube Install 7/10/12	lation, High Fv Start Qty:		·	Accept	*N90 Cust Iter		10C)* Se	etup Start Stop	*NS:	1* 2*
Required Date:	9/28/12	Req'd Qty:	1.00	4	*1 *	Custome	er:					
Reference:					· · · · · · · · · · · · · · · · · · ·			_	R	un Start	*NID	1 *
Approvals:	Process Plans			Date:	Tooling: SPC (Y/N):		Date:			Stop	*NR)*
Sequence ID/ Work Center II 130 *120* Crosstubes Crosstubes	D ,* 1	S 2-D 3-E 4-R	rill Tube a et-up drill eburr ngrave Par emove all	table as per (t # and Batcl marks from t	n # as per Dwg D350-748-141 ube within limits of D350-748-1 S3 on the interior of tube	3 &C Drill Jigs,		Code	Accept Qty Z-10	Qty		esp.
*140 *140* QC Quality Control	, j	QC5- Inspect pa Me CH	mo		on W/O 0.00 0.00 WITH DT8876E (EUROCOPTE	to Midy		٠.				 .

										DQA:	Date	
NCR: Y	es / No				WORK ORDER NON-C	CONI	FORN	MANCE / UPDAT	Έ	_		₹ ₹ **
										QA Closed:	Date	
Work Orde	or.				DISPOSITION			A	AGAINST DEI	PARTMENT/	PROCESS	
	lo.				Rework Scrap Use-as-is		ı	Machining Si	rosstube mall Fab		Water Jet I. Eng. Coor. e/Packaging	Engineering Quality Other
NCR N	lo				Work Order Update]		~ 	mposite	nee, stor	Supplier	
Root		[:		Descri	ption of work order update	Ini	itial	Action		Sign &		
Cause	Date	Step	Qty		or Non-conformance	1	f Eng	Descriptio	on	Date	Verification	QC Inspector
Doc/Data								· <u> </u>				
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Operator												
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Setup												
Other	_					:						
Process						1						
Supplier					•	1						
Training												
Unapproved		<u> </u>										
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Landir T	ng Gear				General				_	Ì		- .
	Bending			_	Bend	\vdash	arain			Ovalized	_	Pressure/Forced
	Centre No	ot Conce	ntric to (^{O/S} _	BOM/Route	\vdash	lardwa			Over/Under	<u> </u>	Temperature/Cure
	Cracks				Broken/Damaged	\vdash	•	on Incomplete		Part Incorred	<u> </u>	Weld
	Crushed/	Crimped.		_	Burrs	\vdash		ons Incomplete/Uncle	ear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs				Contamination			nance	<u> </u>	Part Moved		
	Heat Trea				Countersink	\vdash	∕Iislabe			Positioned W		 }
	Inspectio	•	Tube		Cut Too Short		∕isread			Power Loss/:	Surge	Other
	Ripples in				Drill Holes	\vdash	Offset					
	Torque W			٦	Drawing	-		alibration				
	Turning S	-			Finish	Щс	Out of S	equence				
1	Wave/Tw	ist in Tub	oe e	Ì	Folio		Outside	Dimensions				

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Item ID: Revision ID: Item Name:	D350-748-10 U/R Crosstube Inst	l allation, High Fwd		Accept	*N900	1040	100	* Se	etup Star Stop	ıv.	S1* S2*
Start Date: Required Date:	7/10/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item Customer						
Approvals:		n:	Date:	Tooling: SPC (Y/N):		Date:		R	un Star Stop	I V 1	R1* R2*
Sequence ID/ Work Center I	D	Operation Description Outsource process-Cadpl	ote per OSI017 4 1 0 1	Set Up/ Run Hours	Tool ID	Tool#	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
*150 *150* Outsource3 Outsource process	- Cad plate	Memo Issue P/O: Stress relief: Magnetic Pa Cadium Plat Embrittle rel Possibe Sup	at 375° for 5 hours rticle Inspect per ASTM e per AMS-QQ-P-416B, ' lief at 375° for 8 hours, C plier: Southwest United In ficate of Conformity is at	0.00 E1444 Class 1, Type 2 hromate Treat ndustries				_C_) <u>, 0/11</u>	
*160 *160* Packaging Packaging		Receive & Inspect for Da Memo Ensure certi	amage & Mat'l Certs ficate of conformity is att	0.00 ached 0.00 Ex	W/b CHG	COPP ATTACHE		(16) 0 go. 1	142	11/20	(J)
170 *170* QC Quality Control		QC5- Inspect part compl	eteness to step on W/O	0.00				DA 11 289		<u> </u>	3

NCR:	Yes	/	Nο

												DQA:	Date:	
NCR:	Yes	/ No					WORK ORDER NON-C	100	NFORM	MANCE / UPD	DATE	•	· · · · · · · · · · · · · · · · · · ·	4.4.
							,					QA Closed:	Date:	
Vork Ord	er.						DISPOSITION				AGAINST DE	PARTMENT/	PROCESS	
voin ora	٠	·····					Rework]		Skid-tube	Crosstube]	Water Jet	Engineering
Part	Vo.						Scrap			Machining	Small Fab	4	d. Eng. Coor.	Quality
NCR	No.						Use-as-is Work Order Update			noforming Large Fab	Finishing Composite	Rec/Stor	e/Packaging Supplier	Other
				r		_								
Root		Date	Step	Qty	Desc		otion of work order update or Non-conformance	l	nitial iief Eng	Acti Descr		Sign & Date	Verification	QC Inspector
Cause oc/Data		Date	step	Qty			n Non-comormance	Cit	ilei ciig	Descr	iption	Date	verification	QC IIIspector
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rocess]									
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	<u> </u>	Centre No	t Concer	ntric to	o/s		BOM/Route	L	Hardwa	re		Over/Under	tolerance	Temperature/Cure
	<u> </u>	Cracks			Į.		Broken/Damaged	L	Inspecti	on Incomplete		Part Incorred	ct	Weld
	L	Crushed/0	Ćrimped.		1		Burrs		instruct	ions Incomplete/L	Inclear	Part Lost/Mi	ssing	Wrong Stock Pulled
		Cuffs					Contamination		Mainte	nance		Part Moved		Ì
		Heat Trea	t		l		Countersink	L	Mislabe	led		Positioned V	Vrong	_
		Inspection	n Strip in	Tube			Cut Too Short	L	Misread	1		Power Loss/	Surge	Other
		Ripples in			, [Drill Holes		Offset		_			
		Torque W	aves in E	xtrusio	n [Drawing		Out of 0	Calibration				
	L	Turning Se	equence				Finish		Out of S	Sequence				
		Wave/Twi	ist in Tub	oe .	ſ		Folio	Outside Dimensions						

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DQA: Date: **WORK ORDER NON-CONFORMANCE / UPDATE** NCR: Yes / No QA Closed: Date: Work Order: DISPOSITION **AGAINST DEPARTMENT/PROCESS** Rework Skid-tube Crosstube Water Jet Engineering Part No. \$250-748-101 Small Fab Prod. Eng. Coor. Quality Machining Scrap Rec/Store/Packaging Thermoforming Finishing Other Use-as-is Work Order Update X Large Fab Composite Supplier NCR No. This was only Description of work order update Action Sign & Initial Root Date Verification QC Inspector or Non-conformance Chief Eng Description Cause Date Step Qty Doc/Data 12/7/16 LOO TEST TOE TO TOO TO Equip/Tooling Operator Material Setup See page 6
12/7/15 See 1714 9
12/7/15 See 1714 9 NOT TUBE Other Process Supplier Training Unapproved FAULT CATEGORY **Landing Gear** General Pressure/Forced Ovalized Bend Grain Bending Over/Under tolerance Temperature/Cure BOM/Route Centre Not Concentric to O/S Hardware Weld Part Incorrect Broken/Damaged Inspection Incomplete Cracks Wrong Stock Pulled Instructions Incomplete/Unclear Part Lost/Missing Burrs Crushed/Crimped Maintenance Part Moved Cuffs Contamination Mislabeled Positioned Wrong Countersink Heat Treat Other Power Loss/Surge Misread Inspection Strip in Tube Cut Too Short Offset **Drill Holes**

Out of Calibration

Out of Sequence

Outside Dimensions

Torque Waves in Extrusion

Drawing

Finish

Folio

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

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1 A	/ A PI	IPMAP		X / 4 4 I
. v v	1111 1	MANUEL		87331

87331

Page 5

July-13-12 1:09:57 PM D350-748-101 Accept Item ID: *N900040100* Setup Start **Revision ID:** U/R Crosstube Installation, High Fwd Item Name: *1* **Start Date:** 7/10/12 Start Qty: 1.00 **Cust Item ID:** Required Date: 9/28/12 **Req'd Qty:** 1.00 **Customer:** Reference: Run Process Plan: _____ Date: ____ Tooling: Date: **Approvals:** Stop QC: _____ Date: ____ SPC (Y/N): Date: Tool ID Tool # Plan Reject Reject Insp. Sequence ID/ Operation Set Up/ Accept Qty Number Stamp Work Center ID Description Run Hours Code Qty 180 0.00 SprayPaint *120* 0.00 SprayPaint 1-Prime inside crosstube as per QSI 005 4.2 122 888/T10:00-10:45 2-Prime Outside of Tube as per Dart QSI 005 4.2 123307/T3:00-3:45 **Spray Painting** 0.00 190 QC14- Inspect Spray Paint DAS 12-11-04 *190*

OC

Quality Control

0.00

0.00

0.00

Then, Wrap in plastic bag to protect from scratches

200

200

Crosstubes

Crosstubes

Crosstubes

Memo

1-Install Ground wire Insert, then insert screw and washer

2-Install Abraision strips as per Dwg D350-748-141 & QSI 035.

3-Install supports Using Dt8876 as per Dwg D350-748-141, Torque to 60-80 IN-

12-11-4

											DQA:	Date	e:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPDATE				_	Section 1
											QA Closed:	Date	e:	. •
Work Ord	or.					DISPOSITION			AGAI	NST DE	PARTMENT,	/PROCESS		
VOIR OIG	C1					Rework	7		Skid-tube Crosst	ube		Water Jet	٦	Engineering
Part I	No.					Scrap	1		Machining Small	-	Pro	d. Eng. Coor.	\dashv	Quality
						Use-as-is	1	Thern	noforming Finish	hing	Rec/Sto	re/Packaging	1	Other
NCR	No					Work Order Update			Large Fab Compo	site		Supplier		
	•		1											· · · · · · · · · · · · · · · · · · ·
Root					l ·	ption of work order update		Initial	Action		Sign &	_	l	
Cause	\rightarrow	Date	Step	Qty	(or Non-conformance	Cr	nief Eng	Description		Date	Verification		QC Inspector
Doc/Data														
Equip/Tooling	Ш													
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Material														•
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Other													1	
Process												E		
Supplier													-	
Training							1	-						
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		3ending				Bend		Grain		[-	Ovalized	[F	Pressure/Forced
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		Cracks				Broken/Damaged		Inspect	on Incomplete		Part Incorre	ct	١	Weld
		Crushed/0	Crimped.			Burrs		Instruct	ions Incomplete/Unclear		Part Lost/M	issing	\neg	Wrong Stock Pulled
l	\Box	Cuffs				Contamination		Mainte	nance		Part Moved	-		

Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Positioned Wrong

Power Loss/Surge

Other

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

87331

Page 6

July-13-12 1:09	9:57 PM					• · · · · · · · · · · · · · · · · · · ·							
Item ID: Revision ID: Item Name:	D350-748- U/R Crosstube In	101 Istallation, High Fwd		Accept	*	1 900	040	100) *	Setup	Start Stop	*N: *N:	S1* S2*
Start Date: Required Date: Reference:	7/10/12 : 9/28/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*			Cust Item II	D:						
Approvals:		lan:		Tooling: SPC (Y/N)): 		nte:			Run	Seart Stop	*NI *NI	R1* R2*
Sequence ID/ Work Center I 210 *210* QC Quality Control	D	Operation Description QC5- Inspect part compl	eteness to step on W/O	Set Up/ Run Ho 0.00 0.00		Tool ID	Tool #	Plan Code	Accept Oty DAS 11	Qty	į.	Reject Number	Insp. Stamp
220 *220* Packaging Packaging		Pick Kit Memo		0.00					/X		J	To	SP- 2-1/-(a
230 *230* QC Quality Control		QC4- 100% Inspect kits Memo	for completeness	0.00	0AS 15 10 10 10 10 10 10 10 10	,)				

Seg 172 100 155 CLE PO 18302 LPI as per ASHM 1417 Level 2 M12-11-05

												DQA:	Date:	
NCR: Y	⁄es	/ No					WORK ORDER NON-C	100	NFORM	MANCE / UPDATE		_		
												QA Closed:	Date:	
Nork Orde	or.					١	DISPOSITION			AGAII	NST DE	PARTMENT/	PROCESS	-
WOIK OIG	- 1 •		,			1	Rework			Skid-tube Crosst	ube		Water Jet	Engineering
Part N	١o.						Scrap		1	Machining Small	Fab	Proc	l. Eng. Coor.	Quality
							Use-as-is			noforming Finish	- 1	Rec/Store	e/Packaging	Other
NCR N	10.						Work Order Update			Large Fab Compo	site		Supplier	
Root					Desc	ric	otion of work order update		nitial	Action		Sign &		
Cause		Date	Step	Qty			r Non-conformance	1	ief Eng	Description		Date	Verification	QC Inspector
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		Cracks					Broken/Damaged		Inspect	on Incomplete		Part Incorred	ct	Weld
		Crushed/0	Crimped.				Burrs		Instruct	ions Incomplete/Unclear		Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs Contamination								Mainte	enance		Part Moved		
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	Ripples in Bend Drill Holes								Offset					
	Torque Waves in Extrusion Drawing							Out of Calibration						
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		Wave/Tw	ist in Tub	oe .	Γ		Folio		Outside	Dimensions				

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Work	Order	ID .	87331
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Work Ord () 3-12 1:09		331 / ·		*873	331*							Page 7	
Item ID: Revision ID: Item Name:	D350-748-1 U/R Crosstube Ins	01 tallation, High Fwd		Accept	*N900	040	100)*	Setup	Start Stop	*N: *N	S1* S2*	
Start Date: Required Date: Reference:	7/10/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item l Customer:	D:							
Approvals:	Process Pla	an:	Date:	Tooling: SPC (Y/N):		ate:			Run	Start Stop	17	R1* R2*	
Sequence ID/ Work Center I 240 *240* Packaging Packaging	D	Operation Description Packaging Memo Identify and Location: PPP Rev:	pack for shipping as per	Set Up/ Run Hours 0.00 0.00 PPP D350-748-101	Tool ID	Tool #	Plan Code	Accep Qty	t Re Qt		Reject Number	Insp. Stamp	
250 *250* QC Quality Control		QC21- Final Inspection • Memo	Work Order Release	0.00					_ /.	2/1	1/8	- 49	

MC 5 12-17-07

NCR:	Yes	- /	No
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NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPD)ATE			
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Work Ord	er:					DISPOSITION				AGAINST D	EPARTMENT,	/PROCESS	-
Part I						Rework Scrap		ľ	Skid-tube Machining	Crosstube Small Fab	⊣	Water Jet d. Eng. Coor.	Engineering Quality
NCR I	No.					Use-as-is Work Order Update			noforming Large Fab	Finishing Composite	Rec/Stoi	re/Packaging Supplier	Other
Root					Descri	ption of work order update	Т	nitial	Acti	on	Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Descri	iption	Date	Verification	QC Inspector
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Landi		1				General		l		_	٦		1
	-	Bending			_	Bend	<u> </u>	Grain		<u> </u>	Ovalized	. —	Pressure/Forced
	<u> </u>	Centre No	ot Concer	ntric to	^{O/S} -	BOM/Route	<u> </u>	Hardwa	·	<u> </u> _	Over/Under		Temperature/Cure
		Cracks	o .		<u> </u>	Broken/Damaged	<u> </u>	1	on Incomplete		Part Incorre	<u> </u>	Weld
	_	Crushed/0	Crimped.			Burrs	\vdash	1	ions Incomplete/U	Inclear	Part Lost/M	issing	Wrong Stock Pulled
	_	Cuffs			ļ	Contamination	_	Mainte		-	Part Moved		
	_	Heat Trea			 	Countersink	-	Mislabe		-	Positioned V		7
	\vdash	Inspection		Tube	<u> </u>	Cut Too Short	<u> </u>	Misread	i	Ĺ	Power Loss/	Surge	Other
	<u> </u>	Ripples in				Drill Holes	\perp	Offset					
	<u> </u>	Torque W		xtrusio	1 <u> </u>	Drawing	_	1	Calibration				
	L	Turning Se			<u> </u>	Finish		4	Sequence				
	1	Wave/Tw	ist in Tub	e e	- 1	Folio	ł	Outside	Dimensions				

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July-13-12 1:09:55 PM

Work Order ID:

87331

Parent Item:

D350-748-101

Parent Item Name:

Crosstube Installation, High Fwd

Start Date: 7/10/12

Required Date: 9/28/12

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A New Issue 06-07-05 JLM

IPP Rev:B Update gty of MS21042L5 06-09-12 KJ

VERIFY BY:DD

IPP Rev:C Rev B 07-11-15 DD

IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

IPP Rev:E 08-06-24 revD as per dwg DD verified by:EC IPP Rev:F 10.08.04 added QSI010

4.3 DD verf:EC

IPP REV:G ADD UNDER BEND COMMENT 12-05-28 JLM

Component Item ID/ tem Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
ALS4-1032-225		Purchased	No			200	Each	2,462.0000	1	1	16	10.1	
nsert				114	8520)	#	13-11-	-4
				Location		Loc Qty	<u>L</u> c	oc Code					
				FP-B		2019							
					290	2019							
				ST281		420							
					696	146							
					768	62							
				118	386	55							
					966	68							^
					269	89							
				ST282		23						2	3 V
					9410	10							
				120	0451	13						-	*
ANAKITA) Bolt		Purchased	No			220	Each	411.0000	888	m %_	2334	6	3/
				Location		Loc Qty	<u>L</u>	oc Code			•		
				360		181							
Sm				121	185	181							
_				ST360		230							
				115	5108	3							
				115	5705	1							
				118	8838	8							
					9328	68							
*;				120)423	150							

											DQA:	Date:	· · · · · · · · · · · · · · · · · · ·
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPD	ATE	•		• •
											QA Closed:	Date:	, •
Vork Ord	or.					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
VOIR OIG	٠, .					Rework	٦		Skid-tube	Crosstube]	Water Jet	Engineering
Part I	Vo.					Scrap	1	i	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
	•					Use-as-is]	Thern	noforming	Finishing	Rec/Stor	e/Packaging	Other
NCR	۷o.					Work Order Update]		Large Fab	Composite		Supplier	
Root	_	1		T	Descri	liption of work order update		nitial	Actio	on	Sign &		
Cause		Date	Step	Qty		or Non-conformance		ief Eng	Descri		Date	Verification	QC Inspector
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upplier		•											
raining				}									
napproved													
						F	AUL	T CATE	GORY				
Landi	ng (Gear				General		•			_		_
•		Bending				Bend		Grain			Ovalized		Pressure/Forced
		Centre No	t Concer	ntric to	o/s	BOM/Route		Hardwa	are		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
		Crushed/0	Crimped.			Burrs		Instruct	tions Incomplete/U	nclear	Part Lost/Mi	ssing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	enance		Part Moved		
		Heat Trea	t			Countersink		Mislabe	eled		Positioned V	Vrong	_
	Inspection Strip in Tube Cut Too Short							Misread	d		Power Loss/	Surge	Other
	Ripples in Bend Drill Holes							Offset					
	Torque Waves in Extrusion Drawing							Out of Calibration					
		Turning Se	equence			Finish	Out of Sequence						
		Wave/Twi	ist in Tub	oe oe		Folio		Outside	Dimensions				

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Page 2

Vork Order ID:	87331								
arent Item:	D350-748-101							t Date: 7/10/12	Required Date: 9/28/12
arent Item Name:	Crosstube Installation	on, High Fwd			* .		Sta	rt Qty: 1.00	Required Qty: 1.00
N41-64) oli		Purchased	No		220	Each	1,363.0000	1600	50 3
CNS				Location	Loc Qty		Loc Code		Ol .
311)				ST356	1363			***	_
				119017	363				
				121243	500			-101	
N5-32A		Purchased	No	122151	500 220	Each	277.0000	_4	4/22 () 7 () 7
olt		1 41 0114504							111100 773
				Location	Loc Qty		Loc Code		
SWS				ST339	177				<u></u>
				119862	2				
				120423	75				_
				122151	100			····	
				ST340	100				_
				121541	100				<u> </u>
N960JD10 Vasher	NAS1149D0363J	Purchased	No	123248	200	Each	0.0000	1 1	1 At 12-11-4
N960JD416 Vasher	NAS1149D0463J	Purchased	No		220	Each	29.0000	(32)	32/11/2348 S
SM				Location	Loc Qty		Loc Code	*	m122cc
2				ST351	29				1114-2020
				116289	8				_
				119097	21				
N960JD516 Vasher	NAS1149D0563J	Purchased	No		220	Each	12.0000	<u>C</u> 8	m 03255
(asiici				Location	Loc Oty		Loc Code		80/24/1-60
				ST338	12				05 12 1.
2.1				2612	12				_

NCR:	Yes	/	Nο

												DQA:	Date:	
NCR:	CR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE QA Closed: Date:													
							· · · · · · · · · · · · · · · · · · ·			-		QA Closed:	Date:	. •
Nork Ord	or.						DISPOSITION				AGAINST D	EPARTMENT	PROCESS	
WOIK OIU	ет.					ĺ	Rework	ı		Skid-tube	Crosstube	7	Water Jet	Engineering
Part I	Vo.					ł	Scrap		i	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
						Į	Use-as-is			noforming	Finishing		e/Packaging	Other
NCR I	No.						Work Order Update			Large Fab	Composite		Supplier	
Root			_	_	Desc		tion of work order update	1	nitial		ction	Sign &		
Cause									ief Eng	Des	cription	Date	Verification	QC Inspector
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quip/Tooling														
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etup	-													
ther														
rocess												İ		
upplier														
raining														
napproved														
							F	AUL	T CATE	GORY				
Landi	ng (Sear			_	_	General	_	1		-			_
		Bending			<u> </u>	-	Bend		Grain			Ovalized		Pressure/Forced
	_	Centre No	t Concer	ntric to	o/s	_	BOM/Route		Hardwa			Over/Under	⊢	Temperature/Cure
	ļ	Cracks				-	Broken/Damaged	<u> </u>	1	on Incomplete		Part Incorre		Weld
	Crushed/Crimped. Burrs							$oxed{oxed}$	1	ions Incomplete	/Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs Contamination							<u> </u>	Mainte		<u> </u>	Part Moved		
	-	Heat Trea		T L	-	-	Countersink	\vdash	Mislabe			Positioned V		Jan
	-	Inspection	*	ıupe	-		Cut Too Short Drill Holes	\vdash	Misread Offset	1	L	Power Loss/	ourge	Other
	\vdash	Ripples in Torque W		vtrucio	<u> </u>	—	Drawing	-	4	Calibration				
	_	Turning Se			" F	_	Finish	\vdash	1	Sequence		-		
	H	Wave/Tw	•		}		Folio	\vdash	ł	Dimensions				
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Work Order ID:	87331								
Parent Item:	D350-748-101					Start	Date: 7/10/12	Required	Date: 9/28/12
Parent Item Name:	Crosstube Installation, High Fwd					Star	t Qty: 1.00	Required	Qty: 1.00
D2856-400 Abrasion Strip	Manufactured	No	86905	200	f	143.0425	1.181	1.2431579 AP	12-11-4
-			86705 Location	Loc Qty		Loc Code			
			ST403	133.598					
			81875	133.598					
			ST409	9.4445				And the state of t	
			63735	0.6696					
			68076	0.3149					
460			71164	8.46					
03500¥1 = Saddie	Manufactured	No		220	Each	51.0000	(a)	38671	03 P
< 20			Location	Loc Qty		Loc Code	•		
<i>الا</i> ر			ST423	40					
			85421	40					
			ST425	11					•
			76940	11					
03501-1 Bushing	Manufactured	No		220	Each	232.0000	16	50	
			Location	Loc Qty		Loc Code	•		
Sm			ST051	232					
21.1			67757	4					
			73391	6					
			74866—	206				QX	
auti			85414	16					
D3502±1	Manufactured	No		200	Each	47.0000	2	² Al	12-11-4
			Location	Loc Qty		Loc Code			
			LG050	37					
		•	77041	37			_@		
			\$T051	10					
* .			73419	9			***************************************		
			74873	1					

										DQA:	Date:	
NCR: Yes	s / No				WORK ORDER NON-C	10:	VFOR	MANCE / UP		OA Classide	D-4	· * * * *
										QA Closed:	Date:	
Work Order:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
					Rework			Skid-tube	Crosstube		Water Jet	Engineering
Part No.					Scrap		1	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
		-			Use-as-is		Thern	noforming	Finishing	Rec/Stor	re/Packaging	Other
NCR No.	•				Work Order Update		1	Large Fab	Composite		Supplier	
					<u></u>							
Root	-			Descri	ption of work order update		Initial	Ac	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ch	nief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling		ŀ							·			
Operator												
Material												
Setup												
Other								Ì				
Process	7		j				•					

Landing Gear General Bending Bend Grain Pressure/Forced Ovalized BOM/Route Centre Not Concentric to O/S Over/Under tolerance Temperature/Cure Hardware Broken/Damaged Inspection Incomplete Cracks Part Incorrect Weld Instructions Incomplete/Unclear Crushed/Crimped. Burrs Part Lost/Missing Wrong Stock Pulled Cuffs Contamination Maintenance Part Moved Mislabeled Positioned Wrong Heat Treat Countersink Inspection Strip in Tube Other Cut Too Short Misread Power Loss/Surge Drill Holes Offset Ripples in Bend Torque Waves in Extrusion Drawing Out of Calibration Turning Sequence Finish Out of Sequence Wave/Twist in Tube Folio

Outside Dimensions

FAULT CATEGORY

Supplier Training Unapproved

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July-13-12 1:09:56 PM

Page 4

Work Order ID: 87331 Required Date: 9/28/12 **Start Date: 7/10/12** D350-748-101 Parent Item: Required Qty: 1.00 Start Qty: 1.00 Crosstube Installation, High Fwd Parent Item Name: 2.0000 No 110 Each D350-748-141TRN Manufactured Crosstube Turning Detail Loc Qty Loc Code Location LG 83278 220 Each 2,205.0000 No Purchased Nut Loc Oty Loc Code Location 2205 ST300 119075 116 193 121011 1896 121444 220 1,066.0000 MS21042L5 Each No Purchased Nut Loc Code Loc Qty Location 500 300 500 121652 ST300 566 108827 116105 116548 43 502 119109 17651 2937 127.0000 200 Each No Purchased 12-11-4 Clamp (per MIL-DTL-8783C) Loc Code Location Loc Oty LG050 127 8 116799 8 120676 2 121067 34 121274 122254 75

										DQA:	Date:	
NCR: Y	es / No				WORK ORDER NON-C	CON	FORM	MANCE / UPDATE		-		
										QA Closed:	Date:	·
Work Orde	ar:				DISPOSITION			AGAINS	Γ DE	PARTMENT/	PROCESS	
WOIK Olde					Rework	1		Skid-tube Crosstube		i	Water Jet	Engineering
Part N	lo.				Scrap	1	1	Machining Small Fat	$\neg \vdash$	Prod	l. Eng. Coor.	Quality
					Use-as-is		Therm	noforming Finishing	3	Rec/Stor	e/Packaging	Other
NCR N	No		+		Work Order Update			Large Fab Composite	-		Supplier	
Root				Descri	ption of work order update	Ir	nitial	Action		Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Chi	ef Eng	Description		Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												
Operator		ļ	İ									
Material		1										
Setup		1				j						
Other												
Process												
Supplier					•							
Training												
Unapproved			<u> </u>									
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Landir	ng Gear				General	_			_	,		-1
	Bending				Bend	Ш	Grain			Ovalized		Pressure/Forced
	Centre N	ot Conce	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	Ш	Inspecti	on Incomplete		Part Incorred	:t	Weld
	Crushed/	Crimped.	-		Burrs	\square	Instruct	ions Incomplete/Unclear	L	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat Trea	at			Countersink		Mislabe	led		Positioned V	/rong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Power Loss/Surge

Other

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish

Folio

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Work Order ID:

87331

Parent Item:

D350-748-101

Parent Item Name:

Crosstube Installation, High Fwd

MS27039-1-10

Screw

Purchased

No

122441

200

Each

141.0000

Start Date: 7/10/12

Start Qty: 1.00

Required Date: 9/28/12

Required Qty: 1.00

12-11-04

Page 5

Location	Loc Qty	Loc Code	,	For Andy
GA	100			•
120449	100		· 	í
ST291	5			
120120	5			
ST308	36			•
122027	36			

Page 5

												DQA:	Date:	
NCR:	Yes	/ No				٧	VORK ORDER NON-C	O۱	NFORM	MANCE / UPI	DATE	٠.		
												QA Closed:	Date:	*
Vork Ord	or.						DISPOSITION				· AGAINST D	EPARTMENT	PROCESS	·
VOIK OIG	٠.,						Rework			Skid-tube	Crosstube	7	Water Jet	Engineering
Part I	No.						Scrap			Machining	· Small Fab	Pro	d. Eng. Coor.	Quality
	•						Use-as-is		Therm	noforming	Finishing	Rec/Stor	e/Packaging	Other
NCR I	۷o.			· · · · · · · · · · · · · · · · · · ·	 ,		Work Order Update			Large Fab	Composite		Supplier	
			7	ı	Danas			_	nitial		tion	Cian 0		1
Root Cause		Date	Step	Qty	l		n of work order update on-conformance		ief Eng		ription	Sign & Date	Verification	QC Inspector
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ther							•							
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napproved														
	1.			1			F.A	VUL	T CATE	GORY				
Landi	ng (Gear			-		General							
		Bending				Ве	nd		Grain			Ovalized		Pressure/Forced
		Centre No	t Concer	ntric to	o/s	ВС	M/Route		Hardwa	ire		Over/Under	tolerance	Temperature/Cure
	L	Cracks				Br	oken/Damaged		Inspecti	ion Incomplete		Part Incorre	ct ·	Weld
	L	Crushed/0	Crimped.			Bu	rrs		Instruct	ions Incomplete/	Unclear	Part Lost/M	ssing	Wrong Stock Pulled
		Cuffs				Co	ntamination		Mainte	enance		Part Moved		
		Heat Trea	t			Co	untersink		Mislabe	eled		Positioned V	Vrong	_
		Inspection	n Strip in	Tube		Cu	t Too Short		Misread	. ·		Power Loss/	Surge	Other
		Ripples in	Bend			Dr	ill Holes		Offset	•	_			
		Torque W	aves in E	xtrusio	n [Dr	awing		Out of (Calibration				
		Turning Se	equence			Fin	ish		Out of S	Sequence	•			
		Wave/Twi	ist in Tub	e		Fo	lio		Outside	Dimensions				

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DART AEROSPACE LTD	Work Order:	87331
Description: Crosstube High Fwd (AS350/355)	Part Number:	D350-748-101
Inspection Dwg: D350-748-141 Rev: F		Page 1 of 1

Min

23.12

Max

23.38

Required Dimension

Height

	1/2 Span	40.77	41.03	
	Angle	75	77	
	Total Span	81.55	82.05	
	Bending Passes	7		
	Crushing		6%	
	Twist		0.25	
-189-:4.473 4.26	305 - 4.359 L.9%	-/	95 24.489	. 305 - 4.34) 6.9
				6.7
23.3	12.341 2.152 32 237		2.34Z 2.14	
	- 41.000		40.875 ^V	B

Since A crushii top of Bend 2 4.26 Bottom & Bend 2 6.970

Side A	Side B
Comments	
59"	
7	

size B crushi'
ropal Bens 2 436
Boton of Bens 2 6.9%

	Tree to see	
QC15 Inspection	GAR	
Date	16 17/10/09	

Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	10.08.23	Dwg Rev updated	KJ	
С	11.11.07	Dwg Rev updated	KJ (A	
D	12.04.16	Added bending, crushing & twist dimensions	KJ 🛠	W

DART AEROSPACE LTD

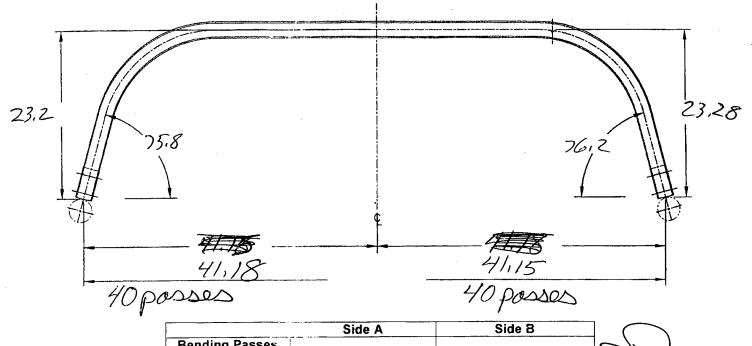
Description: Crosstube High Fwd (AS350/355)

Inspection Dwg: D350-748-141

Rev: F

Page 1 of 1

Required Dimension	Min	Max
Height	23.12	23.38
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	
Crushing		6%
Twist		0.25



	Side A		Side B	
ending Passes				
Crushing				
	Comments			
100151-	- 0056°	RM	17-10-1	

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	10.08.23	Dwg Rev updated	KJ	
С	11.11.07	Dwg Rev updated	KJ (V	
D	12.04.16	Added bending, crashing & twist dimensions	KJ 🛠	W

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Item	Qty -141	Part Number	Description
1	х	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

GENERAL NOTES:



1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115

FINISHED LENGTH = 110.270±0.06

2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2 CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART QSI 0054.2

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES: 0.005 TO 0.010 MAX.

IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS)

9) PARTIS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.

11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING, ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.

12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE.

CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.

- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES. NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

SHOP COPY RETURN TO **ENGINEERING** UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER
87331 ULT 12/07/16

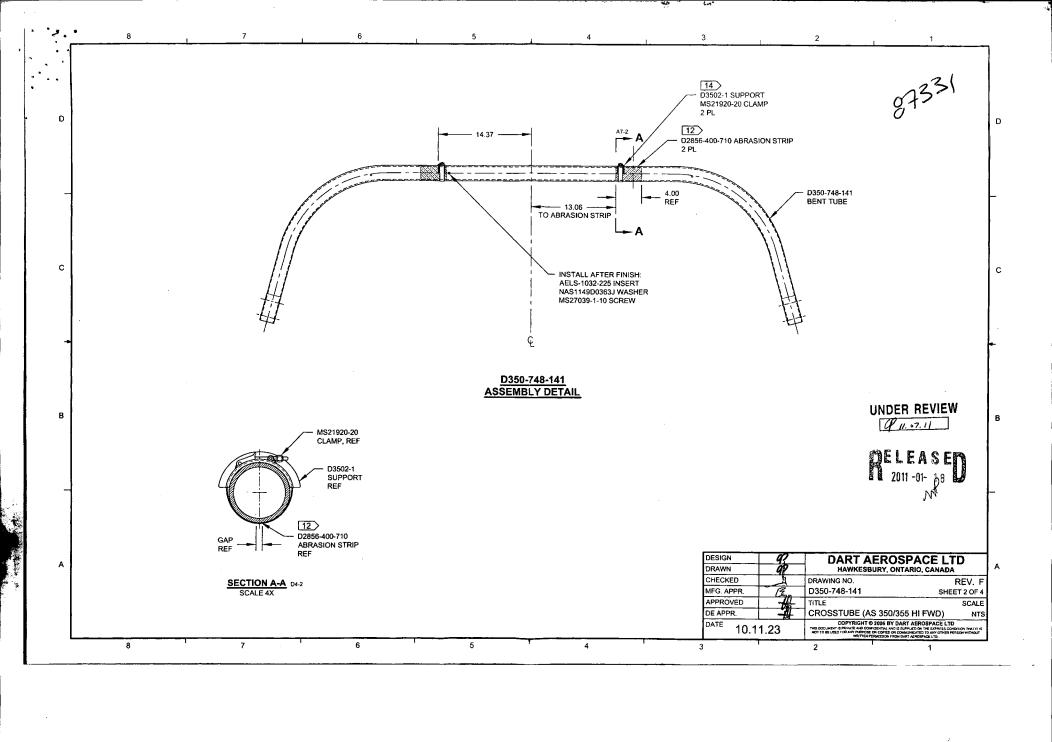
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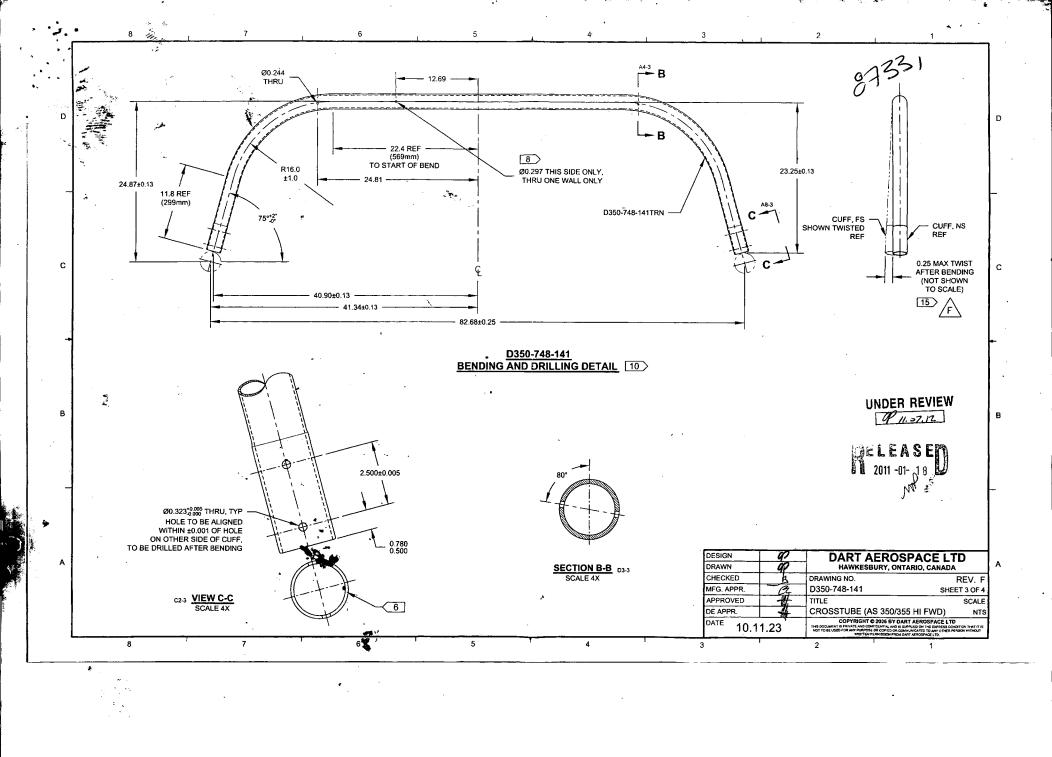
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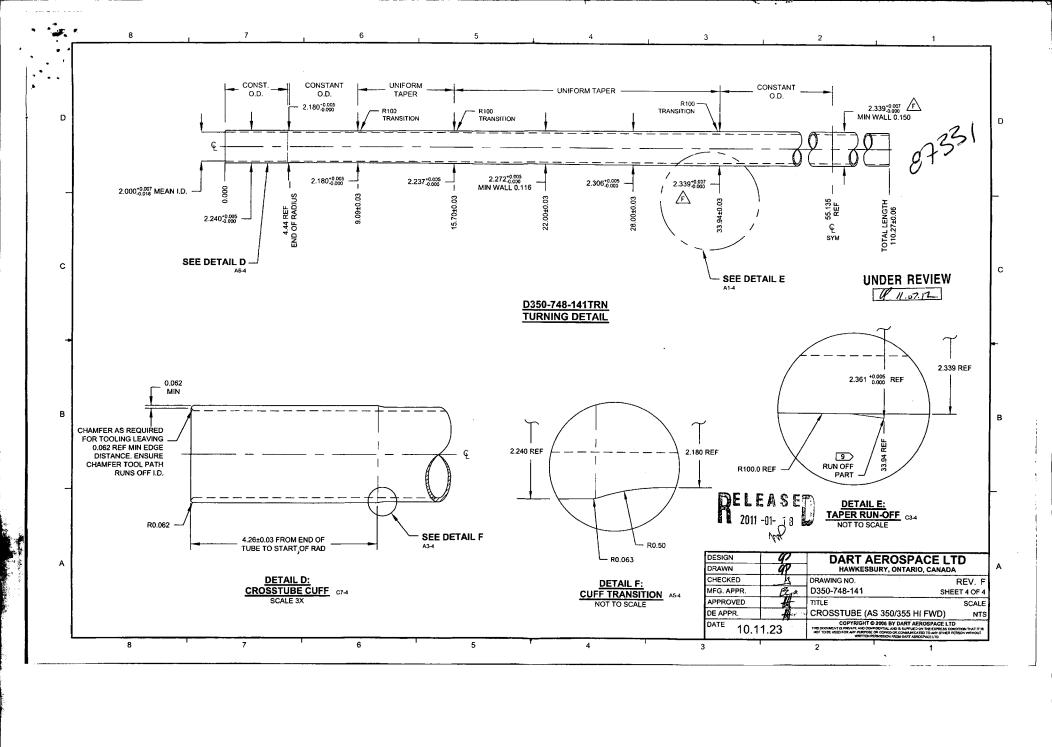
DELEASER

F	TWIST	RC TEST OPT LIMIT (A8-1, C , STOCK DIM I	СР	10.11.23			
E	STANE	E GENERAL N DARDS; RELO -3); TOLERAN	RF	09.09.30			
D	MAG. F	PARTICLE AND	CP	06.10.31			
С	ADD C	AD PLATING		CP	06.08.14		
8	ADD D	6017-115 & PR	CP	06.06.30			
Α	NEW IS	SSUE	CP	06.03.31			
REV.			BY	DATE			
DESIGN		-gp	DART AEROSPA	ACF	LTD		
DRAWN		9?	HAWKESBURY, ONTARI			,	
CHECKE	D	4	DRAWING NO. REV. F				
MFG. AF	PR.	E.	D350-748-141 SHEET 1 OF				
APPRO\	PPROVED TITLE				SCALE		
DE APPI	₹.	#	CROSSTUBE (AS 350/355 HI FWD)				
10.11.23			COPYRIGHT © 2006 BY DART AS THIS DOCUMENT IS PRIVATE AND COMPONENTIA, AND IS SUPPLIED NOT TO BE USED FOR ANY PURPLOSE OR COME OR COMMUNICATION WINTED PERMISSION FROM DART ALE	ON THE EXPIRE	************		



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Certificat de Conformité
Certificate of Compliance:

BON DE	TRAVAIL der	CHARGEMENT load
179	9761	1

CLIENT / customer 215 **DART AEROSPACE** 1270 ABERDEEN **HAWKESBURY**

ON K6A 1K7

LIVRÉ À / shipped to: DART AEROSPACE 1270 ABERDEEN **HAWKESBURY**

ON K6A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT NUMÉRO DE mat'l heat code lot number		
PO18026		Steel			

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

STRESS REL

SAE AMS 2759/1 REV.E.

EXIGENCE / requirement SPÉCIFICATIONS / specified TESTS EXÉCUTÉS / performed RÉSULTATS DE TESTS / results Visual

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
5	150	D350-748-101 (1) CROSSTUBE REFERENCE 87331 (1) D350-748-101 CROSSTUBE REFERENCE: 87335 (1) D350-748-101 CROSSTUBE REF: 87339 (1) D350-748-201 CROSSTUBE REFERENCE: 87220 (1) D350-748-201 CROSSTUBE REFERENCE: 87220 (1) D350-748-201 CROSSTUBE REFERENCE: 81522 CONTENANT: 1 NIL

COMMENTAIRES / comments

ALL THE HEAT TREATMENT PROCESSING PERFORMED ON THIS ORDER WAS ACCOMPLISHED USING HEAT TREATMENT EQUIPEMENT THAT MEETS THE REQUIREMENTS OF AMS 2759. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO

Page 1 of 2



Certificat de Conformité
Certificate of Compliance

BON DE TRAVAIL order			
179761	1		

CLIENT / customer 215 DART AEROSPACE 1270 ABERDEEN HAWKESBURY

ON K6A 1K7

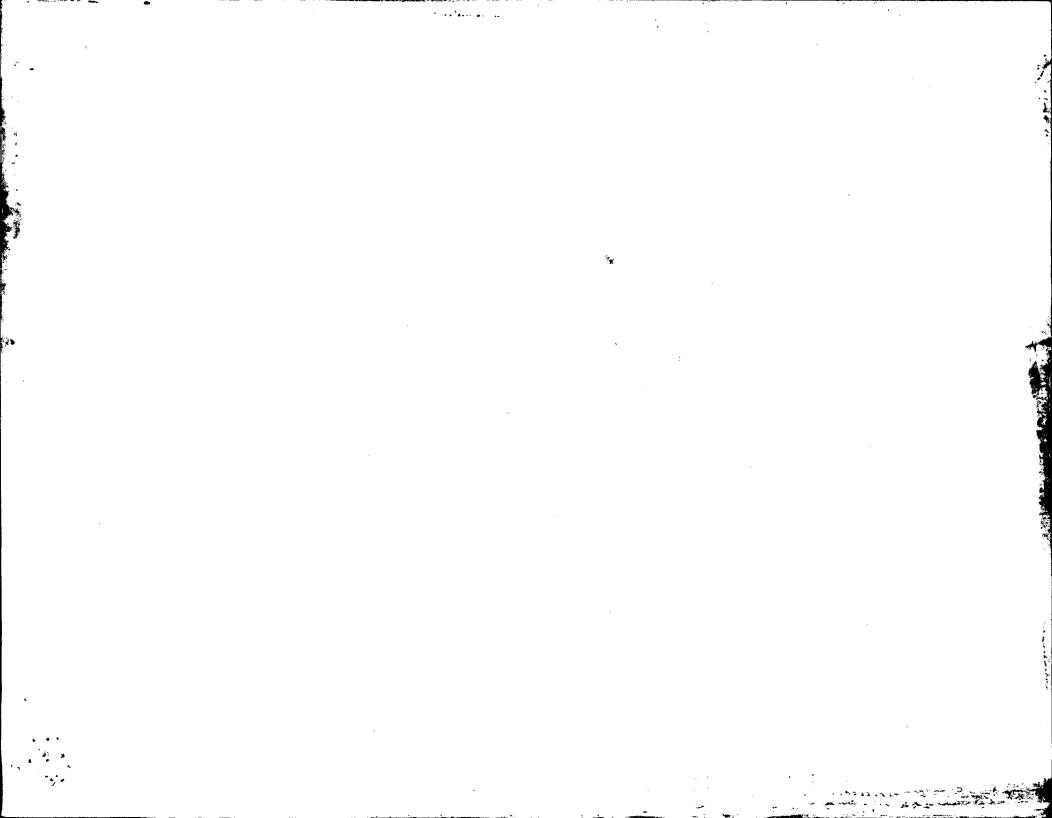
LIVRÉ À / shipped to: DART AEROSPACE 1270 ABERDEEN HAWKESBURY

ON K6A 1K7

UNAUTHORIZED CHANGES OR DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED.

CERTIFIÉ par / Certified by:

DATE: 2012-10-03



CERTIFICATE OF CONFORMANCE

CADORATH PLATING CO. LTD. 2150 LOGAN AVENUE WINNIPEG, MANITOBA R2J-0J1

DATE:

Oct-23-2012

CONSIGNED TO: Dart Aerospace Ltd.

1270 Aberdeen St.

Hawksbury, ON K6A 1K7

W/O #:

118420

INVOICE #:

62946

CONTRACT OR

PURCHASE ORDER #

PO18101

DESCRIPTION:

CROSSTUBE

QTY

P/N # d350-748-101

S/N # 87331

CADMIUM PLATE IAW AMS-QQ-P-416C TYPE 2 YELLOW CLASS 1. MPI IAW ASTM-E-1444. BAKE HEAT CHART # 12-1082, 12-1097.

CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.

Approved Inspector:

12.3

LIQUID PENETRANT TEST REPORT

P- 126-80

ACUREN									
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CLIENT	David	AEroS	TACE		DATE	Nou 1.	2012 TI	ME	AM 🗹 PM 🗆
ATTENTION	ANDS	1 - CHA	STAL		ACUREN JOB NO.	188	1		
ADDRESS !	73~ 42	SELDEEN	ST		PO/WO No.			-	
ADDRESS [A. WES R.	U (L)			Work Location	SAU	E.		
62	AUNUS ISC				ACCEPTANCE STD	ASTM 1417	1051-038R	EV./DATE	2005
- Brouser		EP-	=, 0	· · ·	2035 Tu				
PROJECT _		· · · · · ·							
ITEM(S) EXAMINED _				T					
JOB DESCRIPTION		PROCEDURE NO	LT-x0es×Ω R	FV./DATE	2008	TECHNIQUE N O.	LT- GOHAL R	EV./DATI	<i>9</i> 008
	CE	E CESU			MATERIAL ACLIN		THEL THICKN		/ suce S
PART NO.				Tie	Paction	79			THE
SCOPE A (1)	ENGLOW	NESCEN Z	161-0	ر د دیم ت -	ec non	WAS CU	Type -	, 0,,-	
100%	ON UNI	yell su	1 - C						
TEST DETAILS			O Morris		WATER WASH		SOLVENT REMOVA	RI F	☐ Post EmulsiFied
METHOD FAMILY BRAND	MA FLUOR	FLUX	☐ VISIBLE	<u> </u>	BLACK LIGHT S/N		OUTPUT > 1000 μ'		☐ AMBIENT < 2 fc
PENETRANT	2467	MINIMUM DWEL	LTIME 45 10	Min.	LIGHTING EQUIP.	C FLASHLIGHT C			UT>100 fc @ SURFACE
PENETRANT REMOVE	R 100	MINIMUM DRY T				ABINO	7.6	CAL DUE	DATE (Mary 12)
DEVELOPER	54052	MINIMUM DWEL		Min. Dry	LIGHT METER S/N	108886	0	CAL DUE	DATE NOU (2
TEST SURFACE	Non Aqu	EOUS AQUEC	005	DKI					
SURFACE CONDITION	☐ As GROU	ND 🚨	As WELDED		MACHINED	☐ SHOT BLAS			LEAN BARE METAL
SURFACE TEMPERAT			- 4°C/ 20°F T	o 10°C/50	۴	⊿ 10°C/50°F	то 52°C/125°F	<u> </u>	52°C/125°F
RESULTS-	(METRIC	☐ IMPERIAL)							
ITEM	COMiv	MENTS	ACCI	EPT REJECT					
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1 9	7338)	1						
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Scope of Services									in the immediate and description
The agreement of Acuren Gr									ervices. It is expressly understoo ded nor can they be construed as and use decisions as a result of
representations or warrantie data or other information pr								nure, repair	and use decisions as a result of
								r locality. N	o other warranty, expressed or
implied, is made or intended	by Acuren Group Inc.								
SIGNATURES									12-2-4
CLIENT REPRESEN	TATIVE A	7			SIGNATURE		DTR#	上	100007
TECHNICIAN (SIGNAT	TURE):	PRINT			C.GIM I GAL		PORT		
1	11/1	- Pel.	M			RE	EVIEWED BY:	AME	INITIALS
NAME (PRINT):	Julity	5 TECHNICIAN	in-		2 ^{NO} TECHNICIAN		14/		
	CGSB L		LEVEL	_ CGSB L		LEVEL			
I	CGSB R	EG. NO	00	_ CGSB F	KEG. NO				